

# CONTENTS

---

<b>Foreword</b> .....	.vi
<b>Introduction to the NIST Center for Neutron Research (NCNR)</b> .....	1
NCNR Layout .....	2
The NCNR in Action .....	4
<b>Research Highlights</b>	
Solids that Shrink when Heated .....	6
Spin Correlations and Impurities in a One-Dimensional Quantum Spin Liquid .....	8
Deposition of Toxic Trace Elements and Heavy Metals into Lake Michigan .....	10
Magnetic Domains in Co-SiO <sub>2</sub> Multilayer Tunnel Junctions .....	12
Mechanism of Thermal Barrier Coating Failure at High Temperature .....	14
A New Method to Determine Single Crystal Elastic Behavior from Polycrystals .....	16
Development of Three New Standard Reference Materials .....	18
Dimensions of Polyelectrolyte Chains with Multivalent Counterions .....	20
Characterization of New Biomimetic Materials Using Neutron Reflectivity .....	22
The Dynamics of Hydrogen in Solid C <sub>60</sub> .....	24
Polarons in Colossal Magnetoresistive Materials .....	26
Neutron Interferometry and Optics Facility (NIOF) .....	28
Protein Conformations and Interactions in Biochemical Regulation .....	30
Microstructure Transformation During Microemulsion and Micellar Polymerizations .....	32
Arborescent Graft Polymers .....	34
The Vibrational Isocoordinate Rule in Se-As-Ge Glasses .....	36
Membrane Mediated Polymer Interdiffusion .....	38
<b>Interactions</b> .....	40
<b>Reactor Operations and Engineering</b> .....	44
<b>Instrumentation Developments</b> .....	45
<b>Publications</b> .....	49
<b>Contacts</b> .....	.Inside Back Cover